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DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

FEDERAL AID IN FISH AND WILDLIFE RESTORATION

Job Performance Report

Project F-71-R-10

REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

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Job 3(GC)-b. Region 3 (Boise) Lowland Lakes and Reservoirs
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by

Will Reid, Regional Fishery Manager
Brent Mabbott, Regional Fishery Biologist

June 1987

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State of: Idaho

Name: REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Project No.: F-71-R-10

Title: Region 3 (Boise) Mountain Lakes Investigations

Period Covered: July 1, 1985 to June 30, 1986

ABSTRACT

During the study period, Idaho Department of Fish and Game personnel inventoried 22 alpine lakes within the Sawtooth National Recreation Area. Sixteen of the lakes investigated received plants of cutthroat trout and one lake received rainbow trout. Self-sustained populations of brook trout inhabited two of the lakes. We found three of the lakes barren.

Author:

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OBJECTIVES

1. To obtain angler use and harvest, species composition, and relative abundance.

TECHNIQUES USED

A team of investigators traveled into the Sawtooth Wilderness Area by horseback. At each lake, we obtained data by hook and line angling, angler interview and direct observation. The percent of shoal area in the lake is an observer's estimate only. At each lake, observers also noted the presence or absence of spawning potential in either an inlet or outlet stream.

FINDINGS

Of the 22 lakes investigated in the Sawtooth Mountains, the Idaho Department of Fish and Game stocks 16 with cutthroat trout and one with rainbow trout. Of those lakes planted with cutthroat trout, seven received fish in 1983, nine in 1984 and one in 1985. The lake stocked with rainbow trout received fish in 1983. Three lakes, the PS chain, are currently barren. Two of the lakes are too shallow and the upper lake has been reserved for California golden trout. Two of the lakes, Little Spangle and Big Spangle, contain self-sustaining populations of brook trout. Neither of these lakes receive hatchery fish. Little Spangle appears to have a well-balanced population, while Big Spangle appears overpopulated. Idaho Department of Fish and Game personnel visiting Ardeth Lake observed many brook trout 3 to 12 inches in length. Ardeth also received 1,000 cutthroat trout in 1984. Observers did not see any of the stocked cutthroat trout.

Other observations are as follows:

Diamonds. T7N,R11E,S23; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 1,000. Investigators did not check any anglers at Diamond Lake, but did estimate pressure at a moderate level. They observed three size classes of fish in the lake between 6 and 12 inches in length. Shoal area - 10%; inlet spawning - no; outlet spawning - yes, but limited to only five meters. .Supplemental stocking required.

Triangle. T7N,R11E,S23; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 1,000; shoal area - 30%; inlet spawning - no; outlet spawning - yes (20 m). Fish and Game personnel visiting Triangle Lake did not check any anglers, but estimated that the lake received moderate angling pressure. They observed two size classes of fish between 4 and 12 inches in length.

Snowbank. T7N,R11E,S13; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 700. Observers did not check any anglers at Snowbank, but estimated moderate pressure. They observed only one large fish in the lake.

Plummer. T7N,R12E,S17; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 700; shoal area - 10%. Investigators did not check any anglers at Plummer Lake and estimated that it only receives light use. They did not observe any fish in the lake.

Leggit. T5N,R12E,S15; year last stocked - 1983; species stocked - rainbow trout; number stocked - 500; angling pressure - moderate; inlet spawning - no; outlet spawning - no. Observers did not check any anglers at Leggit Lake nor did they observe any fish.

Camp. T7N,R13E,S18; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 1,000; shoal area - 100%; inlet spawning - no; outlet spawning - no. Although they did not check any anglers at Camp Lake, they did observe a large number of fish 3 to 14 inches in length. Pressure appeared very light.

Heart. T7N,R12E,S13; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; pressure - moderate; shoal area - 5%. Observers noted that this lake has an abundance of fish 3 to 14 inches in length.

P.S. 1,.2, 3. T7N,R23E,S18. The PS chain of lakes has been reserved for stocking California golden trout. These lakes have not been stocked for a number of years and are now barren.

Little Spangle. T7N,R13E,S14. The Idaho Department of Fish and Game does not stock Little Spangle Lake. This lake has a self-sustaining population of brook trout that range in size from 4 to 13 inches in length. We checked four anglers at Little Spangle. They had fished 12 hours total to harvest 7 brook trout for a catch rate of 0.58 fish/hr.

Big Spangle. T7N,R12E,S14. This is another lake not stocked by the Idaho Department of Fish and Game. It has a population of small brook trout. Fish and Game personnel checked four anglers who had fished two hours total to harvest eight brook trout for a catch rate of 4.00 fish/hr.

Ingeborg. T7N,R12E,S15; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; pressure - moderate; shoal area - 20%. Department investigators checked six anglers at Ingeborg with three cutthroat trout. They had fished 5 hours total for a catch rate of 0.60 fish/hr. Fish observed ranged in size from 2 to 12 inches in length.

Arrowhead. T7N,R21E,S13; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 1,000; pressure - moderate; shoal area - 20%. Investigators did not check any anglers at Arrowhead Lake. They did observe a 10-inch cutthroat and one 18-inch grayling.

Benedict. T7N,R12E,S4; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 500; pressure - moderate; shoal area - 50%. No anglers were seen at Benedict Lake. We did observe two size classes of fish in the lake between 4 to 10 inches in length.

Robert Jackson. T7N,R12E,S10; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 500; pressure - light; shoal area - 100%; inlet spawning - no; outlet spawning - no. Department personnel visiting Robert Jackson Lake checked 6 anglers who had fished a total of 5.5 hours to harvest 30 cutthroat trout for a catch rate of 5.5 fish/hr. Fish observed ranged in size between 4 and 12 inches in length.

Three Island. T7N,R12E,S9; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; pressure - light; shoal area - 25%. Investigators did not check any anglers at Three Island Lake. They did observe many 3 to 4 inch trout in the lake. Observations made at Three Island in 1977 also tell of many small fish. We should reduce the number of fish stocked in Three Island.

Everly. T7N,R12E,S9; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; shoal area - 1%; pressure - light. Observers did not check any anglers at Everly Lake. They did observe a few fish 3 to 11 inches in length.

Ardeth. T7N,R12E,S1; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; pressure - moderate; shoal area - 10%. Idaho Department of Fish and Game personnel checked six anglers at Ardeth Lake. They had fished 8.5 hours and caught 8 brook trout up to 12 inches in length. No planted fish were observed. We should remove Ardeth Lake from the stocking schedule.

Virginia T8N, R13E, S31 ; year last stocked - 1983; species stocked - cutthroat trout; number stocked - 1,500; pressure - high; shoal area - 20%; inlet spawning - yes. Department investigators did not check any anglers at Virginia Lake. They did observe a large number of trout between 8 to 18 inches in length.

Edna. T7N,R13E,S6; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; pressure - high; shoal area - 10%. We checked four anglers at Edna Lake, but they had not started fishing. No fish were observed.

Vernon. T7N,R12E,S12; year last stocked - 1984; species stocked - cutthroat trout; number stocked - 1,000; pressure - moderate. Investigators observed two size classes of trout at Vernon Lake, 3 inches and 10 inches.

State of: Idaho Name: REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Project No.: F-71-R-10 Title: Region 3 (Boise) Lowland Lakes Investigations

Period Covered: July 1, 1985 to June 30, 1986

ABSTRACT

During 1985 we continued efforts to establish baseline population data for warm water lowland lakes. We directed major emphasis in 1985 toward Lake Lowell. We estimated the population of largemouth bass in Lake Lowell to have a PSD of 35 and PSD15 of 6. Relative weights for each 10 mm size group fluctuated around the near ideal of 100. Bluegill populations in Lake Lowell appear healthy, with an estimated PSD value of 38.

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OBJECTIVES

1. To obtain angler use and harvest, species composition, relative abundance, age structure and life history data for fish populations in selected lowland lakes and reservoirs within the Boise Subregion of Region 3.

TECHNIQUES USED

Lake Lowell

We sampled fish populations in Lake Lowell with a boat mounted electrofishing unit. We used a pulsed DC current, with power supplied by a 3.5 kw generator. From each game species sampled, we obtained the total length measurement to the nearest 5 mm. From a subsample of black bass, we obtained live weight measurements and a scale sample for age and growth.

To estimate population structure, we calculated the proportional stock density (PSD) (Anderson 1976, 1978) and relative weight (Wr) (Wege and Anderson 1978). The PSD indices reflects the number of fish equal to or greater than a minimum stock length as compared to the number equal to or greater than a minimum quality length and is expressed as:

$$PSD = \frac{\text{Number} > \text{minimum quality length}}{\text{Number} > \text{minimum stock length}} \times 100$$

Where:

PSD = Proportional Stock Density
Minimum quality length = 300 mm for largemouth bass
Minimum stock length = 200 mm for largemouth bass

The relative weight index (Wr) is expressed as:

$$Wr = \frac{W}{Ws} \times 100$$

Where:

Wr = relative weight
W = individual weight
Ws = standard weight

Standard weights have been compiled from data reported by Carlander (1977) and synthesized by Wege and Anderson (1978). The standard weight for largemouth bass is:

$$\log_{10} Wr = 5.316 + 3.191 \log_{10} L$$

Where:

Ws = standard weight
L = individual length

FINDINGS

Lake Lowell

From Lake Lowell, we collected 203 largemouth bass, 53 smallmouth bass, 347 bluegill sunfish, 19 bullhead catfish, 24 black crappie, 16 pumpkinseed sunfish and 187 yellow perch. Largemouth bass captured ranged in size from 40 to 530 mm in total length, with a mean length of 213.3 mm. Modes appeared in the largemouth bass length-frequency at 70 mm, 150 mm and 340 mm in total length (Fig. 1). Bluegill sunfish in the sample varied from 25 to 225 mm in total length, with a mean length of 113 mm (Fig. 2). Yellow perch sampled ranged from 60 to 235 mm in total length, with a mean length of 127 mm. Yellow perch in the sample displayed a single mode at 120 mm (Fig. 3). We did not calculate any population statistics on other species in the sample due to small sample sizes.

Lake Lowell largemouth bass sampled had a proportional stock density (PSD) of 35. The PSD for largemouth of preferred size (PSD15) was six. We obtained live weights for 114 fish. Live weights of largemouth sampled varied from 3 gm at 100 mm in total length to 2,700 gm at 530 mm in total length. Relative weight by size class fluctuated near the ideal of 100 (Fig. 3), with extremes of 420 mm (Wr = 132) and 100 mm (Wr = 26) (Fig. 4). We calculated a mean relative weight of 103 for the sample. Proportion of stock density and relative weight values obtained from Lake Lowell suggest a well-balanced population of largemouth bass.

To estimate age and growth of largemouth bass in Lake Lowell, we subsampled 93 fish to obtain scales. From that 93 fish subsample, we aged 10 age-I, 27 age-II, 29 age-Ill, 13 age-IV, 4 age-V, 3 age-VI, 2 age-VII and 1 age-VIII. We calculated a mean body length of 101, 181, 248, 299, 364, 424, 495 mm in total length for each respective age class (Table 1). We obtained a high correlation between body length and scale length (r^2 = 0.94) (Fig. 5).

Maximum growth of Lake Lowell largemouth bass occurred between age-I and age-II with near uniform growth rates from age-II to age-VII.

Growth of largemouth bass in Lake Lowell appears comparable to other Idaho largemouth bass waters (Table 2).

Bluegill sunfish in the sample had a PSD of 38% with 8 cm = stock size and 15 cm = quality size. The reflected PSD value for Lake Lowell bluegill sunfish indicated a healthy, well-balanced population.

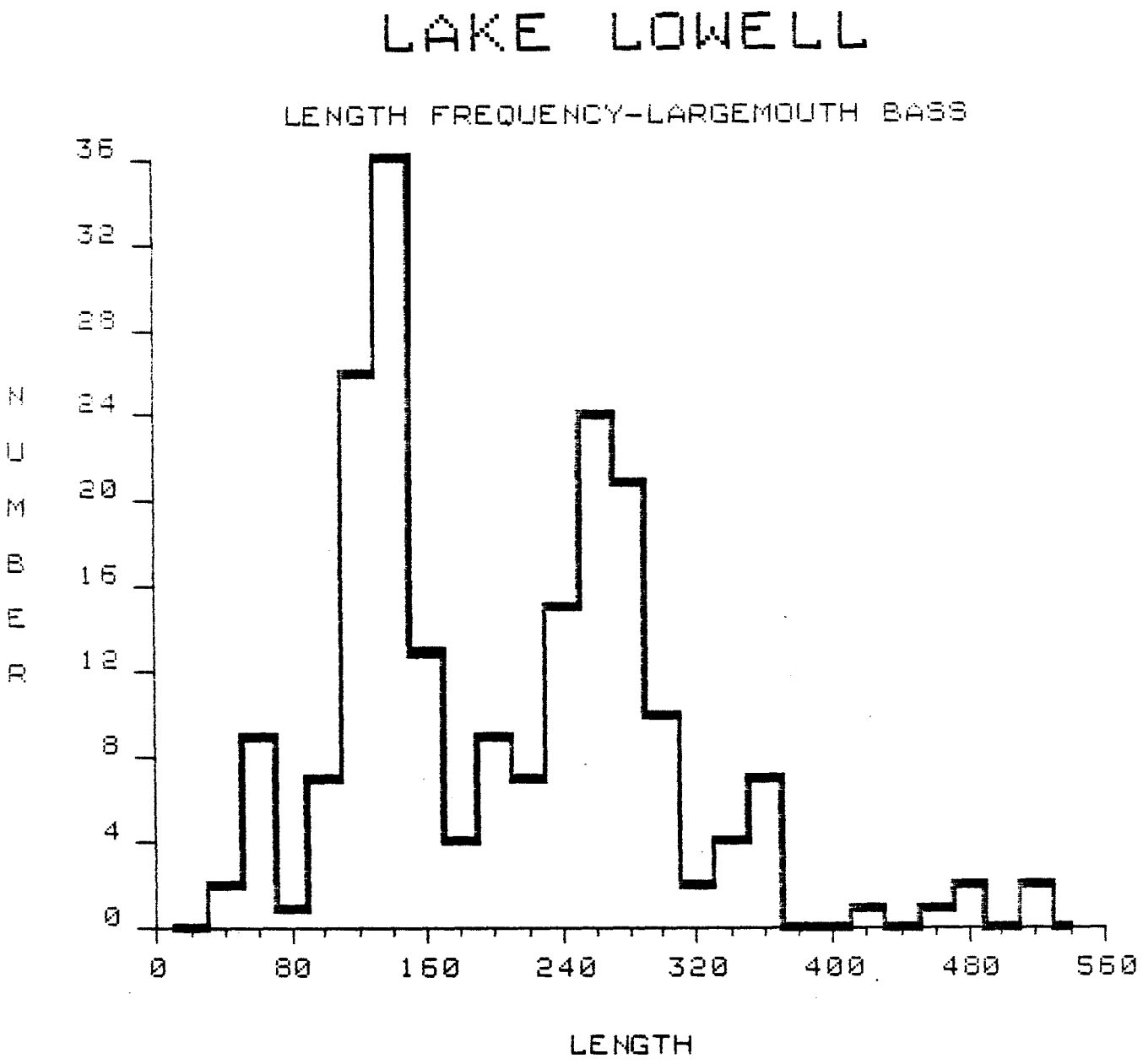

Figure 1. Length-frequency in largemouth bass, Lake Lowell, 1985.

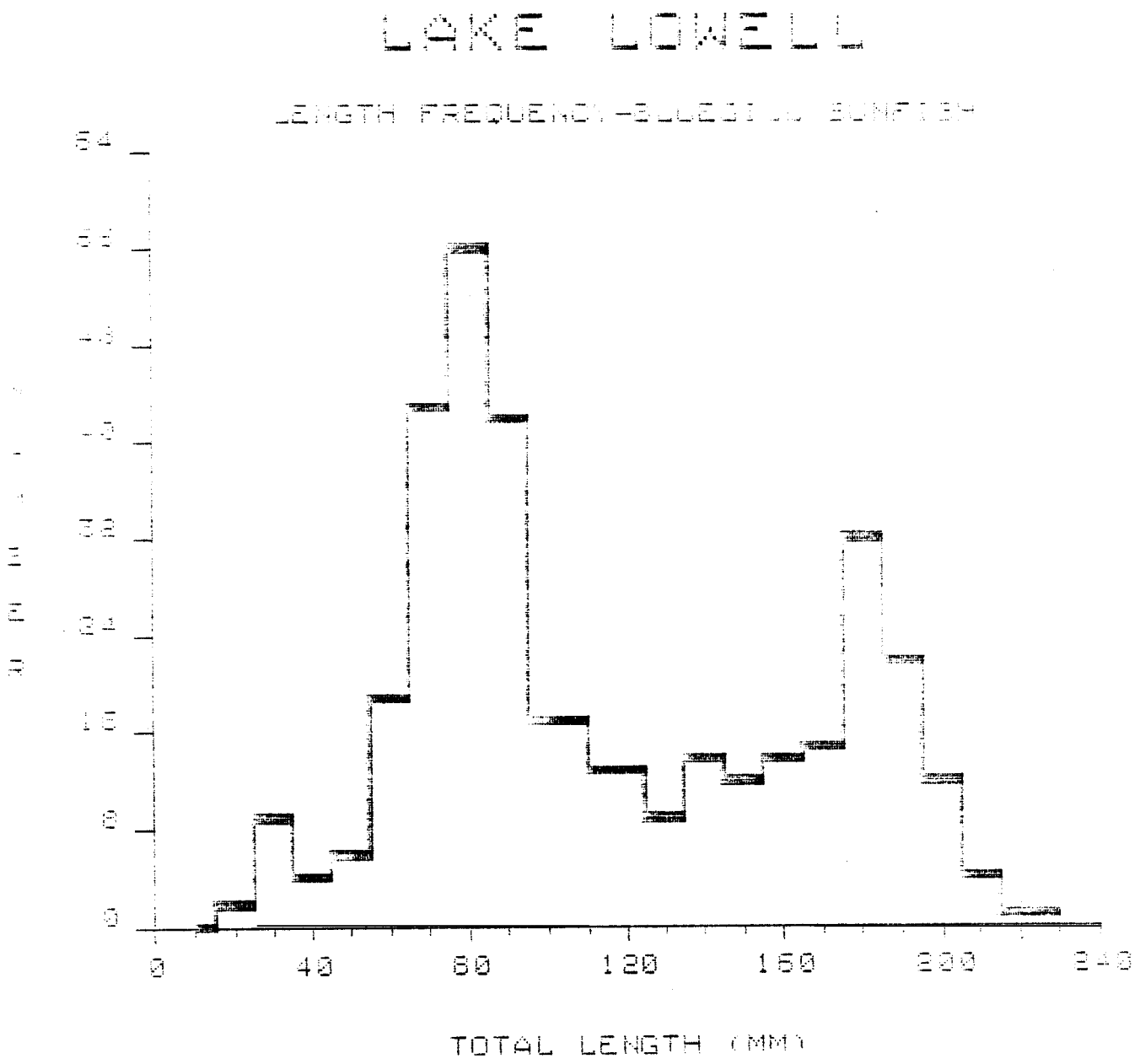

Figure 2. Length-frequency in bluegill sunfish, Lake Lowell, 1985.

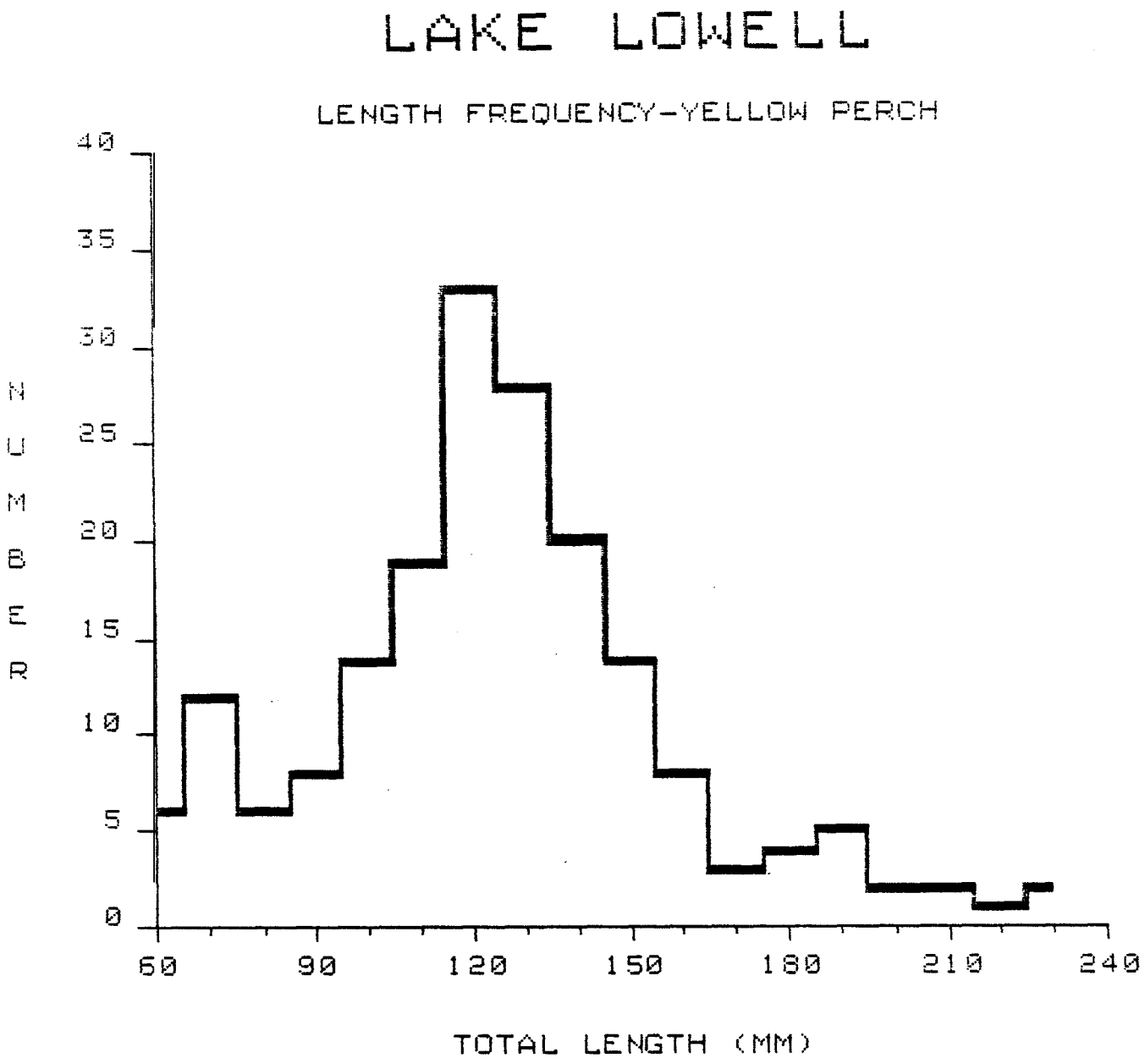

Figure 3. Length-frequency in yellow perch, Lake Lowell, 1985.

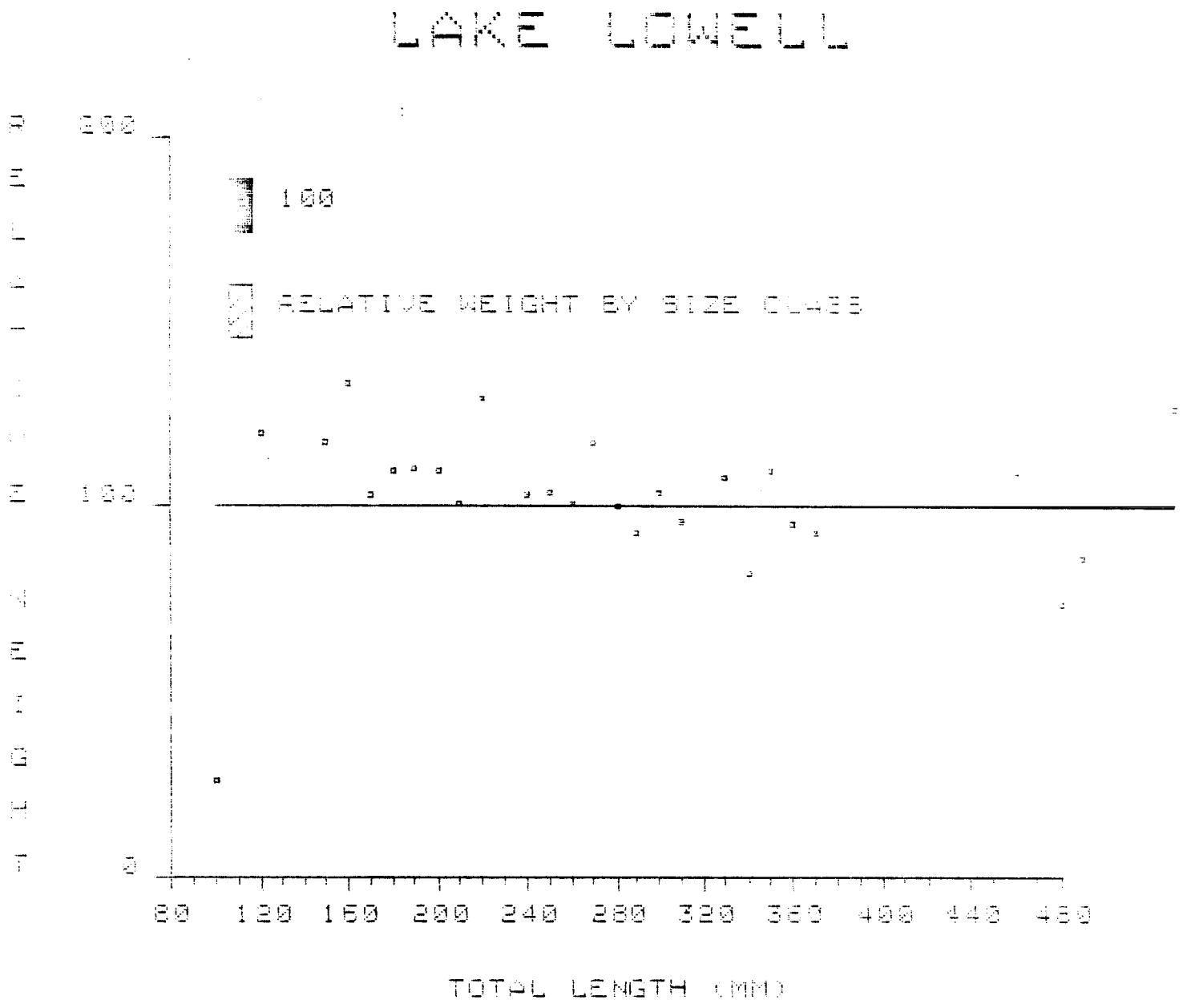

Figure 4. Relative weight (Wr) of largemouth bass by size class, Lake Lowell, 1985.

Table 1. Length-at-age for largemouth bass sampled from Lake Lowell, 1985.

	AGE							
	I	II	III	IV	V	VI	VII	VIII
Length	101	181	248	299	364	424	495	479
Growth (mm)	80	67	51	65	60	71	0	
N	93	83	56	23	10	6	3	1

Deadwood Reservoir

Angler interviews conducted at Deadwood Reservoir produced a sample of 67 mature kokanee. Kokanee sampled ranged in size from 11 to 14 inches, with a mean total length of 12 inches.

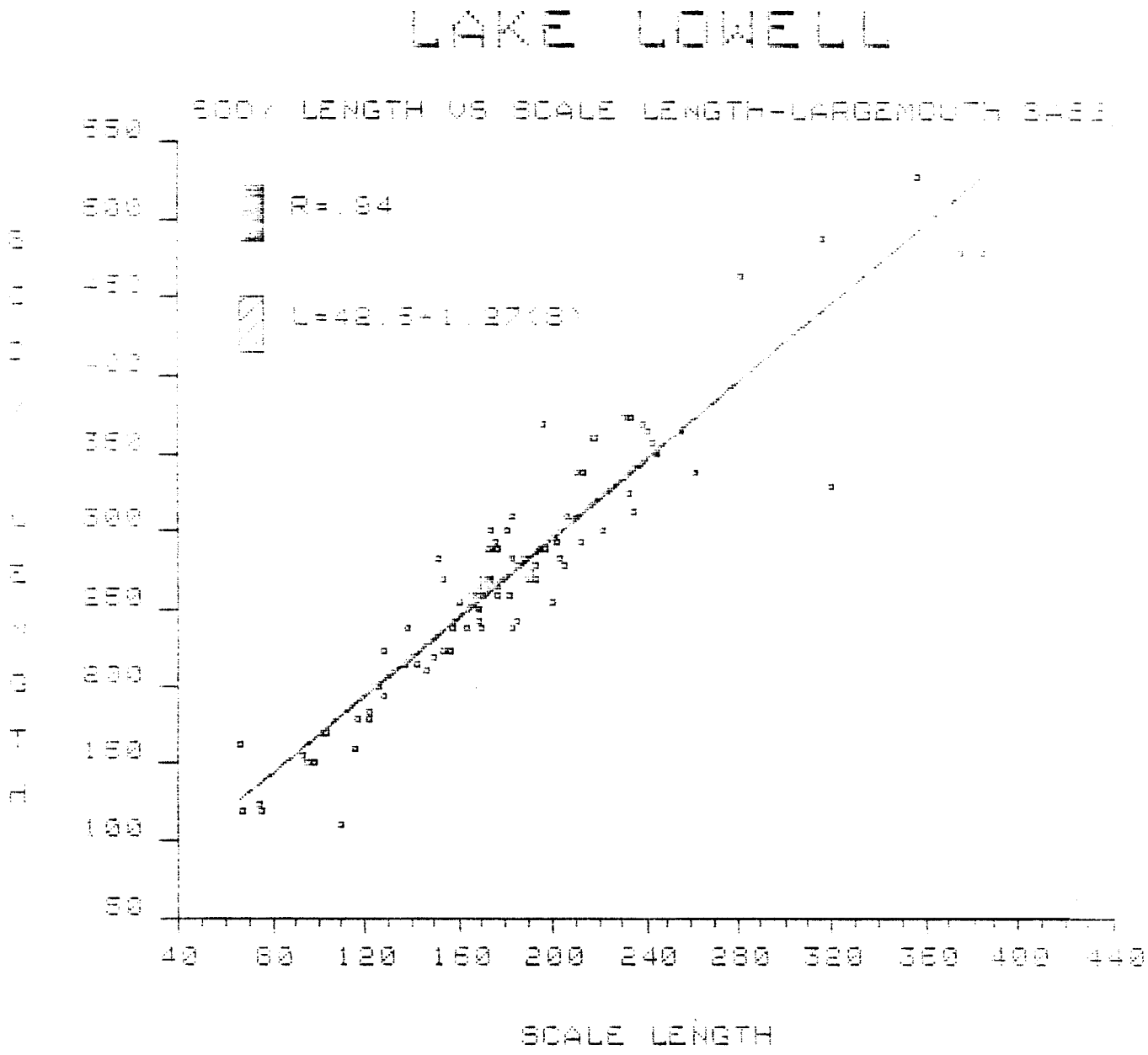

Figure 5. Body length - scale length correlation for largemouth bass sampled from Lake Lowell, 1985.

Table 2. Length-at-age for Lake Lowell as compared to other Idaho bass waters.

	AGE							
	II	Ill	IV	VVI		VII	VIII	
Lake Lowell	101	181	248	299	364	424	479	495
C.J. Strike (Reid 1985)	86	161	258	336	381	395	451	467
Paddock (Reid 1985)	77	164	233	290	343	392	467	
Fernan (Rieman 1982)	64	130	189	238	303	343	370	398
Thompson (Rieman 1982)	78	160	224	278	316	372	410	457

Other Lakes and Reservoirs

Spot creel checks conducted by Idaho_ Department of Fish and Game personnel provide catch rates and species composition for lowland lakes and reservoirs (Tables 3 and 4).

Table 3. Catch statistics from spot creel checks in selected Region 3 waters, 1985.

Waters	Anglers	Hours	Catch	Fish/hour	Fish/angler
Arrowrock	122	422.5	219	0.52	1.80
Blacks Creek	19	33	9	0.27	0.48
C.J. Strike	126	319	127	0.40	1.00
Crane Falls	35	190	235	1.24	6.71
Horseshoe Bend	35	69	68	0.98	1.94•
Indian Creek	30	74	27	0.35	0.90
Lake Lowell	437	1338.5	1573	1.18	3.50
Lucky Peak	755	1584.5	1029	0.65	1.61
Paddock	26	220.5	270	1.22	10.37

Table 4. Species composition (%) of angler creels based on spot creel checks of selected Region 3 waters, 1985.

Water	N	WFB	HFB	KOK	BULL	LIB	SMB	CC	BH	CRAP	YP	BG	P5	CFI
Arrowrock	219		88.8	0.9	3.2		1.4				5.9			
Blacks Creek	9								22.2	22.2	55.8			
C.J. Strike	127	1.8	V.8			3.9		3.2	17.3	7.1	V.5	11.8		
Crane Falls	235		5.5			1.7			0.4	0.4		51.1	40.9	
H.S. Bend	68		100.0											
Indian Creek	V		3.7						3.7	74.1		18.5		
L. Lowell	1573					18.8		0.3	22.3	24.9	10.5	23.3	0.1	1.2
Lucky Peek	1213	0.7	93.7	1.8	0.3		1.1				1.2			
Paddock	V0					11.1			15.9	73.0				

N = Number
WFB = Wild rainbow trout
HRB = Hatchery rainbow trout
KOK = Kokanee
BULL= Bull trout
LMB = Largemouth bass
SMB = Bnallmouth bass
CC = Channel catfish
BH = Bullhead catfish
CRAP = Crappie
YP = Yellow perch
BG = Bluegill sunfish, pumpkinseed sunfish
CHIN = Fall chinook

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State of: Idaho

Name: REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Project No.: F-71-R-10

Title: Region 3 (Boise) Stream Investigations

Period Covered: July 1, 1985 to June 30, 1986

ABSTRACT

During 1985 we collected relative abundance information from two streams, Grade Creek (tributary to Brownlee Creek) and Cow Creek (tributary to Owyhee River). Personnel also gathered length-frequency data from white sturgeon below C.J. Strike Dam.

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OBJECTIVES

1. To obtain physical and biological data for streams and rivers within the Boise Subregion of Region 3.

TECHNIQUES USED

To obtain relative abundance information, we used a battery powered backpack electroshocker. We counted all fish sampled and obtained total length measurements from each game fish sampled by species. During the study period, we collected data from Grade Creek (a tributary to Brownlee Creek) and Cow Creek (a tributary to Owyhee River).

Idaho Department of Fish and Game personnel collected length-frequency data from white sturgeon in the Snake River downstream from C.J. Strike Dam. We collected information by standard hook and line fishing and by angler interviews.

Volunteer anglers supplied all length-frequency data for white sturgeon measured between C.J. Strike Dam and Swan Falls Dam. Those angler reports did not indicate hours fished. Therefore, we did not report catch rates for that reach of the Snake River.

FINDINGS

Grade Creek

Grade Creek is a high-gradient tributary to Brownlee Creek that flows into the Snake River at Brownlee Dam. We sampled three locations in Grade Creek: one near its mouth, another about midway in the stream and the last in the upper portion of the drainage. Near the mouth of Grade Creek, we sampled 127 Juvenile rainbow (redband) trout. All trout collected near the mouth of Grade Creek ranged from one-half to one inch in total length. In the mid-section of Grade Creek, we collected two adult trout both nine inches in total length. From the upper drainage, we sampled three 50-yard sections of stream. We did not sample any fish from the upper two sections and only one trout--total length 10 inches--from the lower section.

Cow Creek

Cow Creek, which flows into Owyhee River in Oregon, flows intermittently from its mouth downstream through private land holdings.

The upper two miles of Cow Creek flow year-round. On August 7, we sampled two 100-yard sections. Flows in the s-rearr,m re only 0.5 cfs. From those two sections, we sampled 67 rainbow (redband) trout.

Snake.River

In 1981 Idaho Department of Fish and Game research biologists conducted life history and population abundance studies in the Snake River from C.J. Strike Dam to Givens Hot Springs. During the 1981 inventory, Fish and Game personnel fished a total of 2,588 hours to capture nine white sturgeon between C.J. Strike Dam and Swan Falls Dam and 1,105 hours to capture one white sturgeon between Swan Falls Dam and Givens Hot Springs (Lukens 1982). Based on that data, researchers suggest as a management option that the white sturgeon catch-and-release fishery downstream from C.J. Strike Dam to Brownlee Reservoir should be terminated (Lukens 1982; Cochnauer 1983). However, angler interviews conducted in 1984 found substantially higher catch rates, indicating the status of white sturgeon populations in the Snake River between C.J. Strike Dam and Swan Falls Dam, or between Swan Falls Dam and Brownlee Reservoir, are not as depressed as previously indicated.

During 1985 we began gathering length-frequency and catch rate data from the Snake River downstream from C.J. Strike Dam. We obtained total length measurements for 26 white sturgeon between C.J. Strike Dam and Swan Falls Dam, and 18 sturgeon between Swan Falls Dam and Walters Ferry. Downstream from Swan Falls Dam, we fished a total of 152 hours to harvest the 18 sturgeon for a catch rate of 0.11 fish/hr.

White sturgeon captured between C.J. Strike Dam and Swan Falls Dam varied in size from 33.0 228.6 cm (13 in to 90 ins) in total length, with a mean length of 169.6 cm (66.8 in). The total length of white sturgeon measured downstream from Swan Falls Dam ranged in size from 30.5 to 248.9 cm (12 in to 98 in) and had a mean length of 164.38 cm (64.7 in).

OTHER STREAMS AND RIVERS

Spot creel checks conducted by Idaho Department of Fish and Game personnel provide catch rates and species composition of angler catch for selected rivers and streams in the Boise Subregion of Region 3 (Tables 1 and 2).

Lost streams currently provide catch rates at or near target level, as identified in the Idaho Department of Fish and Game Fisheries Management Plan, 1985-1990. The Boise River from Star to Lucky Peak Reservoir did not meet management plan goals of 0.5 fish/hr.

Table 1. Catch statistics for selected streams in the Boise Subregion of Region 3 from spot creel checks, 1985.

Water	Anglers	Hours	Catch	Fish/Hour	Fish/angler
Boise River	664	1,132.5	292	0.26	0.44
Crooked River	11	23	28	1.22	2.55
Grimes Creek	22	42	17	0.40	0.77
Harris Creek	38	44	90	2.05	2.37
Jordan Creek	32	104	96	0.73	2.37
M.F. Boise	87	269	92	0.38	1.17
M.F. Payette	45	33	122	3.70	2.71
Mores Creek	24	34	26	0.76	1.08
N.F. Boise	33	157	86	0.54	2.61
Snake River	861	7,904	768	0.40	0.88

Table 2. Species composition (% of catch) of selected streams in the Boise Subregion of Region 3 frail spot creel checks. 1986.

Water	N	WRB	HRB	BN	WF	YP	SMB	STURG	CC	BH	OTHER
Boise River	292	1.4	91.8	1.0	5.8						
Crooked River	28	100.0									
Grimes Creek	17	23.5	70.6			0.5					
Harris Creek	90	3.3	96.7								
Jordan Creek	96	100									
M.F. Boise	92	2.2	79.3		18.5						
M. F. Payette	122	48.5	51 .6								
Mores Creek	26		100								
N. F. Boi se	86	18.3	66.3		17.4						
Snake River	768		1.7				13.4	1.6	79.2	2.3	1.8

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State of: Idaho

Name: REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

Project No.: F-71-R-10

Title: Region 3 (Boise) Technical Guidance

Period Covered: July 1, 1985 to June 30, 1986

ABSTRACT

During the study period, the Boise Subregion Fishery staff of Region 3 provided technical assistance to 13 government agencies and for six major projects by private firms. During the year, we provided written comments on a total of 154 projects.

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OBJECTIVES

1. To provide technical assistance to city, county, state and federal agencies.

2. To provide assistance to private firms and individuals for activities that may impact public resources.

TECHNIQUES USED

1. We inspected and provided comments for all water, riparian or wetland activities that may have impact on aquatic resources.

FINDINGS

Idaho Department of Water Resources

During 1985 the Idaho Department of Water Resources asked for technical assistance on 64 applications to other public waters, 5 applications to appropriate public waters and 1 application to drill a geothermal well.

Of the stream alteration applications received, 46 applied to the Boise River (Table 1).

Federal Energy Regulatory Commission

Rule changes by the Federal Energy Regulatory Commission (FERC) governing qualifications for exemption, brought hydro activity in the Boise Subregion of Region 3 to a near halt. Twenty-three exemption applicants have reapplied for preliminary permits and forty-two of the applicants have an unknown status. Three hydro projects in the study area are now operational, two are exemptions, and three licensed projects are under construction. Fourteen applicants have also surrendered their exemptions.

Boise Planning and Zoning

We continued in 1985 to provide technical assistance to the City of Boise to help draft the Boise River Development Plan. The City adopted the plan this year after extensive public involvement. In addition, the

City of Eagle has adopted a river development plan similar to that adopted by the City of Boise. Ada County and Garden City have yet to adopt measures to provide riparian and river protection.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation has completed power modification studies in the Boise and Payette rivers. From these studies, we have gained commitments for minimum pool elevations at Deadwood Reservoir and Arrowrock Reservoir, increased storage for winter flows in the Boise River, maintenance of instream flows for the Payette River, increased flows in the lower Deadwood River and improved boat access at Deadwood Reservoir.

Table 1. Region 3 technical assistance by agency, type and activity and number of projects, 1985.

Agency	Type Activity	Number
	Stream Alteration	
Idaho Department of Water Resources	Boise River	46
	Payette River	8
	Weiser River	2
	Owyhee River	2
	Snake River	4
	Salmon River	1
	Bruneau River	1
	Total	64
	Geothermal Water Right	
FERC	Preliminary permit	2
	Hydro construction	1
	Violation	1
	Flow determination	2
Idaho Department of Lands	Reclamation plant	10
	Dredge and placer	2
	Riverbed lease	3
Highways	Bridge construction	4
Boise City Parks	Greenbelt	2
Idaho Department of Parks and Recreation	Instream flow	1
Boise National Forest	Timber sales	5
	Grazing allotment	2
	Mining	2
	Forest Plan	1
U.S. Bureau of Reclamation	Power Modification Study	1
	Deadwood Mine flow	1
	Mineral withdrawal	1
U.S. Bureau of Land Management	Public land dispute	1
EPA	Discharge permit	15
Boise Parks	River Plan	1
	Parks	2
	Greenbelt	1
	Sub Development	2
U.S. Army Corps of Engineers	Regional permit	2
	40% permit	14
	Hydro	2
Private	Pond Development	2
	Greenbelt	1
	Aquaculture	3

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